calcified lesions in large coronaries, we performed a matching analysis on 306 lesions treated with either rotational atherectomy (RA) + adjunct PTCA (147), Palmaz-Schatz stents (103), or a combination of RA plus adjunct Palmaz-Schatz stents (56). Matching criteria included quantitative angiographic determination of reference vessel size (>3 mm) and the presence of moderate/severe angiographic calcification. Study endpoints were acute procedural angiographic results {final minimum lumen diameter (MLD) and final % diameter stenosis (DS)} and the need for subsequent target lesion revascularization (TLR) @ > 6 months.

	RA	Stent	RA + Stent	p
Reference (mm)	3.16 ± 0.32	3.36 ± 0.52	3.35 ± 0.48	< 0.0001
MLD pre (mm)	0.95 ± 0.45	1.05 ± 0.57	1.12 ± 0.45	0.0573
MLD final (mm)	2.08 ± 0.58	2.82 ± 0.51	3.27 ± 0.44	< 0.0001
Acute gain (mm)	1.12 ± 0.61	1.81 ± 0.66	2.17 ± 0.60	< 0.0001
% DS final	33.7 ± 16.4	13.1 ± 13.3	4.2 ± 15.3	< 0.0001
TLR (%)	*31.6*	*24.5*	*12.2*	*0.0280*

Peri-procedural complications were similar for the three different treatment modalities. *We conclude:* These data support the conclusion that pre-atheroablation using RA in calcified lesions followed by adjunct stent placement achieves the best acute angiographic results and the lowest follow-up TLR. A randomized clinical trial to confirm these preliminary results is indicated.

3:00

713-5 Recanalization of Chronic Total Coronary Occlusions Using a Laser Guidewire: the European TOTAL Multicenter Surveillance Study

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Despite continuous improvement of mechanical hardware for coronary angioplasty, chronic total occlusions (CTO) remain a true challenge in the field of interventional cardiology. To assess efficacy and safety of the Spectranetics laser guide wire (LG), in 20 European centers a multicenter Surveillance Study was conducted as a preamble to the randomized Total Occlusion Trial with Angioplasty assisted by Laser guidewire (the TOTAL trial). Here we report on the final results of the surveillance study. Since May 1994, patients with CTO were included. Angiographic exclusion criteria were the absence of a visible entry point or the inability to visualize the distal true lumen through collateral circulation. Results are presented as mean ± SD, unless otherwise indicated. Analysis was completed in 345 patients (pts) (age 59 ± 10 yrs), (TIMI 0 n = 284, TIMI 1 n = 61). Fifty-four pts (16%) had a previous failed attempt at recanalization by using mechanical guidewires (MG). Vessel distribution was RCA n = 168, LAD n = 125, LCX n = 51, and RI n = 1. The median angiographic age of occlusion was 12 weeks (range 2–728), when based on clinical data 29 weeks (range 2–884). The occlusion length was 19 ± 10 mm. LG success was obtained in 205 pts (59%). LG perforation occurred in 56 cases (16%), in four patients (1.2%) leading to tamponade (non-surgical drainage) due to the advancement of an angioplasty device over the LG into the free pericardial space. Other in-hospital serious adverse events reported were: three non Q wave MI's, four repeat PTCAs for sub acute re-occlusion, and one case of LG malfunction. There were no deaths or emergency CABGs. *Conclusion:* In awaiting the results of the TOTAL trial, these results are encouraging and indicate that the LG is a powerful tool in the treatment of CTO's refractory for treatment with MG.

3:15

713-6 A Randomized Study of Cutting Balloon versus Conventional Balloon Angioplasty: Preliminary Results

H. Hosokawa, T. Suzuki, T. Tani. *National Toyohashi Higashi Hospital, Toyohashi, Japan*

Cutting Balloon (CB), a PET balloon with 3–4 longitudinal blades, was postulated to reduce barotrauma by scoring atheroma during balloon inflation and subsequently lower the incidence of restenosis. To confirm the hypothesis, we conducted a single-center prospective randomized study.

Methods: Two hundred and six patients were randomized into three groups: CB alone (n = 75), CB with adjunctive PTCA (n = 67), and conventional balloon angioplasty (POBA) (n = 64). Six month follow-up angiograms were available in 104 (50% of eligible patients) and are still ongoing.

Results:

	CB alone	CB + PTCA	POBA	P
Ref. diameter (mm)	2.7 ± 0.5	2.8 ± 0.6	2.6 ± 0.6	ns
MLD pre	0.5 ± 0.5	0.4 ± 0.4	0.3 ± 0.3	ns
MLD post	2.0 ± 0.5	2.2 ± 0.6	1.9 ± 0.5	ns
MLD FU	1.5 ± 0.6	1.8 ± 0.8	1.6 ± 0.6	ns
% DS pre	59 ± 12	60 ± 12	62 ± 12	ns
% DS post	27 ± 12	25 ± 14	28 ± 12	ns
% DS FU	40 ± 19	36 ± 19	39 ± 19	ns
Procedural success	84%	85%	97%	ns
Stent required	7%	6%	8%	ns
Binary restenosis	36%	27%	31%	ns

Procedural success = less than 50% residual stenosis, Binary restenosis = % diameter stenosis >50 at follow-up

There were no in-hospital and long-term major cardiac events in any groups.

Conclusions: CB can provide an acute outcome similar to conventional PTCA. However, CB has not been shown to prevent restenosis. Adjunctive PTCA may be the better way to improve its outcomes.

714 Vascular-Endothelial Dysfunction and Treatment

Monday, March 17, 1997, 2:00 p.m.–3:30 p.m.
Anaheim Hilton and Towers, Pacific D

2:00

714-1 Both Active and Passive Smoking Alter the Elastic Properties of the Human Aorta: an Additional Detrimental Effect of Smoking

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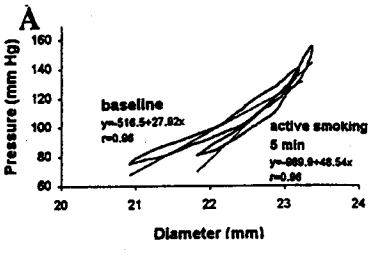
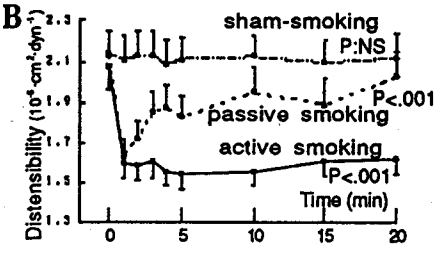
To test the effect of smoking (S) on the elastic properties of the aorta, serial pressure-diameter loops (fig. A) were obtained from the simultaneous recordings of the thoracic aortic diameter (D) and pressure (P), before and after the initiation (time 0) of active S of one cigarette (nicotine: 1.0 mg, 20 pts) or passive S (20 pts), as well as before and after sham-S in 20 pts who underwent diagnostic catheterization. Aortic Ds were measured by an ultrasonic dimension catheter, developed in our institution (Circulation 1995; 92: 2210–9) and aortic Ps by a Millar micromanometer. The P-D loop and aortic distensibility (= 2 [pulsatile change in aortic D]/[diastolic aortic D] × [pulse P]) changed significantly both with active S (figs A, B) and passive S (fig B), whereas they remained unaltered with sham-S (fig B). Thus, the aorta became stiffer after active S and passive S, whereas its elastic properties remained unaffected with sham-S.





This effect of S on the elastic properties of the aorta contributes to the multiple other detrimental effects of S on human health.

MONDAY ORAL